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training in civilized races being usually more adequate in the case of man than of woman would, perhaps, explain why man has progressed more rapidly in size than woman. It seems impossible, taking variation as a measure of the intensity of selection, to reconcile the relative increases in size of man and woman with any direct effect of natural selection.

8. To sum up, then, the following results seem *suggested* by these measurements.

(i.) Civilized man has progressed generally on primitive man in size, variation and correlation.

(ii.) This progression can hardly be accounted for by increased selection (because of the increased variation), not by decreased selection (because it is inconsistent with the relative changes in male and female size). It might possibly be accounted for by decreased selection and improved physical conditions.

(iii.) Woman is more variable than man in civilized races.

(iv.) Woman is more highly correlated than man in civilized races.

(v.) In uncivilized races the sexes are more nearly equal in the matter of size, variation and correlation than in the case of civilized races.

(vi.) It is impossible to say that civilized woman is nearer to the primitive type than civilized man, for while civilized man differs more from the primitive type than civilized woman, so far, probably, as absolute size is concerned, he has made only about half her progress in variation, and hardly any progress at all in correlation.

(vii) The causes (*e. g.*, lessening of selection) which tend to increase variation may also increase correlation. In other words, the intensity of the struggle for existence is not necessarily a measure of the intensity of correlation.*

* The mathematical theory of selective correlation shows that the close selection of an organ, say the

The measurements made by Mr. Warren on the Libyans, the results of which he has kindly favored us with, are, on the whole, fairly in accordance with the above conclusions. He finds for the

Mean of the sexual ratio of the means.....	1.092
“ “ “ the variations.....	1.028
“ “ “ the correlations.....	1.068

The corresponding quantities for the French are: 1.109, 0.939, 0.956, or, we concluded, that in passing from uncivilized to civilized peoples, from Libyan to French, the men gain on the women in size—here very slightly, and the women gain upon the men very markedly in variation and correlation.

These results are merely suggestions, but they may possibly serve to emphasize the importance of a careful measurement of the long bones of, say, 100 members of both sexes for a series of civilized and uncivilized races. In the former case at least there does not appear to be any real difficulty, except the need of coöperation, in obtaining measurements similar to those of M. Rollet, for both English and Germans. The value of such statistics for comparative purposes would be very great.

ALICE LEE,
KARL PEARSON.

MIGRATION OF THINGS AND OF MEMORIES.

IN the minds of some students the question of migration of forms is frequently confounded with that of the migration of tribes. It must not be forgotten by those who are carefully studying the origin of industrial forms on the Western World that there were daily mails delivered on the American shore from the Eastern Continent, from the remotest antiquity.

The United States Navy has been dropping bottles overboard in the Atlantic

femur, may actually tend to reduce the correlation between two other organs, say the humerus and the radius.

Ocean, at the Azores, in deep water along the coast of Spain and from the Madeira and the Canaries southward along the coast of Africa. All of these bottles that have been recovered have been found on the coast of South America, on the Antilles, and some of them as far west as the mouth of the Rio Grande. It can be inferred from this therefore, that every buoyant object which has been dropped into the ocean during the present geological epoch by prehistoric or historic Spaniards, Portuguese or Africans has found its way to America and been stranded somewhere between the 10th parallel south and the 30th parallel north.

In the northern part of the Atlantic Ocean the currents run the other way and the mails have been delivered from America to Europe. In the Pacific Ocean the daily mails delivered on the west coast of America from Mount Saint Elias southward have proceeded from about the 20th parallel north, in the vicinity of the Malay Peninsula and Archipelago, thence have travelled through the China Sea and the Japanese Sea to pick up objects designed for the Western Hemisphere.

In the Southern Hemisphere the mails travel the other way and materials consigned to the Ocean Current Company were taken from Chili and Peru to be delivered upon the Easter Island and the various groups of Polynesia, some of them reaching as far as Melanesia. In addition to these great mail services of the Pacific there was a narrow strip of service called the 'counter-current' between the equator and the 10th parallel north, the articles consigned to it being delivered on the west coast of Central America.

In the Arctic Ocean the mails proceeded from west to east, passing up through Bering Strait, across the Pole, and finding their way first to east Greenland and then around Cape Farewell to the southwestern shores of that great island. The Arctic

current from Baffin Land and northward brought the mails from the Eskimo area southward even as far as Charleston, South Carolina. The consequence of such interrupted communication cannot be overestimated. All who have studied the arts of primitive races know how quickly their plastic minds respond to a congenial suggestion. It would not even be necessary for a Chinese or Japanese vessel to bring a single living teacher to take part in the pedagogic work of instructing the West Coast tribes in eastern Asiatic arts.

The recent example of a throwing stick which drifted from Port Clarence, south of Bering Strait, and was picked up on the shores of west Greenland by Dr. Rink, is one of an interrupted series of communications between one of those great mailing stations and another. A second element in technical pedagogy has not been emphasized by any modern writer, and yet it cannot be overlooked; and that is the survival of industrial processes and productions in the myths and traditions of wandering tribes, so that one of them having passed over a long area where a certain kind of activity was not demanded, and coming again to a place where the conditions are favorable to its revival, changed a song or an ancient tribal memory into an actual fact again.

O. T. MASON.

FIELD WORK OF THE UNITED STATES GEOLOGICAL SURVEY.

THE plans of operation of the United States Geological Survey for the fiscal year 1897-1898 have been approved by the Secretary of the Interior and the work of the field season of 1897 has been started, the parties having all taken the field. The sums appropriated for the Survey this year were given in detail in a recent issue of *SCIENCE*, separate amounts being set apart for specific branches of work and for the